

TO: Paul Kober



Interoffice
Communication

FROM: Investigation Team

DATE: August 2, 1999

**SUBJECT: INCIDENT INVESTIGATION - VCM Release at Sphere
- July 6, 1999**

On July 6th, 1999, at 9:28 am there was a release at the VCM sphere. The relief valve lifted for 14 minutes. There were no injuries and exposure was limited to the responding operators with respiratory protection.

A team was formed on 7/6/98 to investigate the incident, determine the causes(s), and make recommendations to prevent recurrence. Team members are listed on the plant file copy of this report.

Description of the Incident

At 8:11 am on July 6th, the panel operators received a 70 psig standard priority high-pressure alarm on the VCM storage sphere. This alarm was acknowledged. The VCM railcars were placed on vapor that morning. VCM is pulled from the cars and compressed to the sphere. There were 18 cars on vapor. The 70-psig alarm sounds every day the cars are on vapor during the summer months.

At 9:13 am there was a bad data quality instrument alarm at 104.99 psig (the upper limit of the instrument range). At approximately 9:30 am, the guard at the guardhouse heard a hissing sound at the tank farm and called the yard supervisor. There was no visible sign of a leak or release of any kind. The yard supervisor went to the control room and both the yard supervisor and the operations supervisor went to investigate. At 09:37 am a good data quality alarm sounded at 104.99 psig, indicating the pressure instrument was back in range. At 9:39 am there was a 20% LEL alarm at the tankfarm. There was no high level alarm.

The operations and yard supervisor could not see any visible sign of relief and did not call to the control room to shutdown the compressors until they were near the sphere. Once near the sphere, both realized the sound was from the top of the sphere and the compressors were shut down. The compressors were shut down at 9:42 am. The emergency notification alarm was sounded.

The valve lifted for 10 minutes and chattered for another 4 minutes then reseated. The operations supervisor, shift supervisor, and two chief lead operators responded to the top of the sphere to investigate. They valved off the relief valve that had lifted (there is a second relief valve that was left lined up). There was no sign of ice at the valve. The yard department relieved the sphere pressure to the empty VCM railcars. The level in the sphere

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was only 34 feet. The high level alarm is 44 feet. The Vinyl operators pumped VCM to the unit and used the emission recovery system to pull pressure off the sphere.

The ERT responded and established a perimeter, monitoring the area. There were readings of 1 ppm to a radius of about 100 feet from the sphere. There was no visible VCM cloud or fixed-point monitor readings indicated a release. There was only one gas monitor alarm at 20% LEL at 9:39 am.

After the pressure was relieved to the empty VCM railcars, the sphere pressure returned to less than 60 psig. The all clear was sounded after the pressure in the sphere was reduced and control was ensured.

Extent of Injuries

There were no injuries.

Primary Cause

The primary cause of the incident was an overpressure of the VCM sphere.

Contributing Cause(s)

1. No High-High Pressure Alarm.
2. No Pressure shutdown for the compressors.
3. High Inerts in the Railcars.
4. 18 cars on vapor in the summer months.
5. The length of the release was affected by no detectable VCM properties.
(vapors, ice, etc.)

Recommendations

1. Review incident with operations, maintenance, contractors, and engineers.

Responsibility: NVS, JBA, JBH, BRD, CLW, and MLC

Target Completion: 9/1/99

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2. Add High-High pressure alarm based on rupture disk vendor recommendation.

Responsibility: DEK, ACW

Target Completion: 7/7/99

Status: Complete. High-pressure alarm is set at 80 psig. High-high pressure alarm is set at 85 psig.

3. Add automatic shutdown of compressors based on high-high pressure alarm.

Responsibility: DEK, ACW

Target Completion: 8/1/99

Status: Complete

4. Discontinue vapor removal from railcar until shutdowns are installed.

Responsibility: LDH

Target Completion: 7/6/99

Status: Started and continuing.

5. Have all VCM railcars offloaded on 7/6/99 analyzed for inert gases.

Responsibility: MLC

Target Completion: 8/1/99

Status: Complete

6. Review and change offloading procedure to verify the number of cars that can be on vapor at one time in combination with compressors in service without causing sphere pressure problems.

Responsibility: MLC

Target Completion: 9/1/99

7. Review sphere design for possibility of increasing sphere relief pressure.

Responsibility: BRD, JBH

Target Completion: 10/1/99

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8. Review incident with LCVCM and PHH and determine loading procedure issues.

Responsibility: TRM

Target Completion: 8/1/99

Status: Complete

9. Investigate and recommend changes to Hazop system to identify this kind of incident.

Responsibility: JBH

Target Completion: 10/1/99

10. Review need for two relief valves on the sphere.

Responsibility: GSN, DRW

Target Completion: 8/1/99

Status: Complete

11. Review inerts removal procedure and implement changes as needed.

Responsibility: NVS

Target Completion: 9/1/99

12. Call OKC to alert about situation that caused release. OKC was informed and verified a pressure shutdown for the compressors.

Responsibility: DEK

Target Completion: 7/7/99

Status: Complete

13. Review plant alarm and announcement procedure with the operators.

Responsibility: NVS

Target Completion: 9/1/99

14. Improve plant alarm and notification system. Alarm and announcements could not be heard in many areas of the plant.

Responsibility: CMM

Target Completion: 8/1/01

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Action Items for Response Improvements

The Safety Department and ERT will address these items.

1. Train the guards on the wind direction announcement.
2. Review headcount procedure with ERT.
3. Recommend improvements or replacement for the HNUs
4. Add a hitch to the breathing air trailer.
5. Do not loan out emergency vehicle.
6. Train all on radio procedures during emergencies.
7. Review need for facemasks with microphone attachments.
8. Review perimeter and area restriction procedure with ERT.
9. Train operators on location of all SCBAs.
10. Assign someone to emergency gate closure.

Approved By: Paul Kober
Plant Manager
Aberdeen Plant

Team members are listed on the plant file copy of this report.

cc: CMM,JBA,JBH,MLC,SCH,BRD,AEV,KGA,JEB